IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

AUDIOEYE, INC.,

Plaintiff,

v.

ACCESSIBE LTD.,

Defendant.

Case No. 6:20-cv-997-ADA

REBUTTAL DECLARATION OF JAMES FOGARTY, PH.D IN SUPPORT OF DEFENDANT ACCESSIBE'S REPLY CLAIM CONSTRUCTION BRIEF

I, James Fogarty, declare as follows:

1. I make this declaration in support of Defendant accessiBe's reply claim construction brief, and in particular, to address certain arguments raised by Plaintiff or expert in its opening brief. I have been asked to render opinions with regard to how a person of ordinary skill in the art would have understood certain claim terms in the asserted patents as of their respective filing dates. If requested by the Court, I am prepared to further explain the opinions set forth herein, as well as provide additional background information related to the technologies disclosed in the asserted patents and the state of the art around their respective filing dates.

QUALIFICATIONS AND EXPERIENCE

2. My qualifications for forming the opinions set forth in this Declaration are summarized here and explained in more detail in my curriculum vitae, which is attached as Exhibit A.

3. I am currently a Professor of Computer Science & Engineering at the University of Washington ("UW") and an Associate Director of the Center for Research and Education on Accessible Technology and Experiences (UW CREATE), a leading UW cross-campus interdisciplinary center whose aim is to make technology accessible and to make the world accessible through technology, which was launched with an initial $2.5M gift from Microsoft.

4. I am also Director of DUB, the UW's a cross-campus initiative advancing all aspects of Human-Computer Interaction and Design ("HCI") research and education, one of the world's top HCI communities. I also served on the founding executive committee for UW's interdisciplinary Master of HCI and Design, on the founding Executive Council for the UW's Population Health Initiative, and in the founding of UW Medicine's Digital Health Advisory Committee.

5. My broad research interests are in Human-Computer Interaction and User Interface Software and Technology, often with a focus on the role of software frameworks and

tools in developing, deploying, and evaluating new approaches to the human obstacles surrounding everyday intelligent technologies.

6. My prior research includes new applications of low-cost and unobtrusive personal and environmental sensing, of non-expert machine learning, and of tools for runtime modification of graphical interfaces. My work with machine learning includes research on context awareness, web image search, social network friend groups, and gesture recognition. Our research helped define common approaches to everyday interaction with machine learning (e.g., "Show Similar Images" functionality in Microsoft's web image search) and common approaches to machine learning in software developer tools.

7. Much of my work has had direct applications to the field of accessibility. For example, my work on runtime interpretation and modification of interfaces explores how to enable new approaches to deploying interaction techniques in already existing technology ecosystems (e.g., enabling third-party modification of interaction with Android apps, for goals such as improving accessibility using a screen reader).

8. My research group has been leading the largest-known open analyses of the accessibility of Android apps, providing new understanding of the current state of mobile accessibility and new insights into factors in the ecosystem that contribute to accessibility failures. Our analyses of common failure scenarios has directly led to Google improvements in the accessibility ecosystem (e.g., corrections to Android documentation code snippets that were previously inaccessible and therefore creating many accessibility failures as developers used those inaccessible snippets in their own apps) and motivated additional research (e.g., longitudinal analyses of accessibility, including the introduction of new accessibility failures and the repair of previously-existing failures in developers correctly applying accessibility metadata). Some of this work was published in connection with the ASSETS 2017, ASSETS 2018, TACCESS 2020 conferences.

9. My group has also been developing new techniques for runtime repair and enhancement for mobile accessibility, providing the ability to support third-party runtime

enhancements within Android's security model and without requiring modification to existing accessibility services or apps. We have applied these approaches to accessibility repair (e.g., techniques to allow social annotation of apps with missing screen reader data), and to enable entirely new forms of tactile accessibility enhancements. These techniques provide a basis for both improving current accessibility and exploring new forms of future accessibility enhancements. Some of this work has been published in connection with the CHI 2017, ASSETS 2018, and UIST 2018 conferences.

10. My group also developed some of the earliest techniques for pixel-based recognition of interface elements in support of runtime enhancements, including enhancements to improve accessibility. Runtime modification research prior to our own had generally relied upon complete existing accessibility data, upon brittle and inflexible techniques for injecting code directly into existing applications, or upon extremely limited representations that could not support many desired enhancements. We showed techniques for direct recognition of the pixel level appearance of entire interface hierarchies to support runtime enhancements, including implementation of a target-aware pointing technique for improving accessibility for people with motor impairments. Some of this work was published in connection with the CHI 2010, CHI 2011, CHI 2012, CHI 2014, and UIST 2014 conferences.

11. Our work has maintained strong visibility and impact across multiple major technology organizations. My students have consistently been recruited and hired for HCI and accessibility internships and full-time positions at Apple, Google, and Microsoft. I have presented our accessibility research to Microsoft groups focused on accessibility and applications of artificial intelligence and machine learning in accessibility, including to Microsoft's Chief Accessibility Officer. I have presented our accessibility research to a Google workshop on Machine Learning for Accessibility, including to Google's Director of Accessibility. Our work directly informed Apple's 2020 deployment of Screen Recognition functionality applying on-device recognition to improve the accessibility of image elements, functionality that was

implemented in part by students hired directly from my research group based on our accessibility research.

12. I have consistently published in the field of accessibility and related underlying software techniques since at least 2009, including our CHI 2009 development of a target-agnostic pointing enhancement for people with motor impairments and the above-described techniques for interface enhancements. Our interface research has included innovative interface enhancements in traditional desktop interfaces, in web-based interfaces, and in mobile interfaces, so I am knowledgeable in these multiple interface contexts, their commonalities, and their differences. I have similarly included accessibility and related underlying software techniques in my graduate and undergraduate teaching since at least 2008. I have also served on and chaired several committees for leading research conferences in human-computer interaction and related software. My work has been directly supported by the National Science Foundation, by the Agency for Healthcare Research and Quality, and by the National Institutes of Health, and by unrestricted gifts from multiple leading technology organizations including Adobe, Google, Intel, and Microsoft.

MATERIALS CONSIDERED

13. I have considered information from various sources in forming the opinions set forth herein. In addition to the materials cited herein, I have reviewed the asserted patents and their file histories, the materials set forth in my prior declaration (which I understand was submitted by Plaintiff as Docket No. 36-13 (Exhibit 12 to the Declaration of Jared Bunker), the parties opening claim construction briefs, and the declaration of Plaintiff's expert, Monty Myers (Docket No. 36-11, Exhibit 10 to the Declaration of Jared Bunker). In addition, I have also drawn on my education, experience, and knowledge of relevant engineering principles and technologies, including in software development both generally and for accessibility applications.

LEGAL STANDARD

14. Although I am not an attorney, I am informed of several principles concerning claim construction, which I have used in forming my opinions set forth herein. I understand that under the legal principles, claim terms are generally given their ordinary and customary meaning, which is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. I further understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which a claim term appears, but in the context of the entire patent, including the specification.

15. I understand that claim terms are to be construed in light of the surrounding claim language, the patent specification, and the file history (collectively the intrinsic evidence). I am informed by counsel that the patent specification has been described as the single best guide to the meaning of a claim term, and is thus highly relevant to the interpretation of claim terms. And I understand for terms that do not have a customary meaning within the art, the specification usually supplies the best context of understanding the meaning of those terms. I understand that limitations should not be imported from the specification into the claims, from disclosed embodiments into the claims, or from the prosecution history into the claims, absent a clear disavowal or definition by the patentee. I understand that constructions that render other claim terms surplusage or without meaning are rarely if ever correct, as are constructions that would exclude disclosed embodiments.

16. I am further informed by counsel that other claims of the patent in question, both asserted and unasserted, can be valuable sources of information as to the meaning of a claim term. Because the claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.

17. I understand that the prosecution history can further inform the meaning of the claim language by demonstrating how the inventors understood the invention and whether the inventors limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be.

18. I understand that extrinsic evidence may also be consulted in construing the claim terms—such as my expert testimony, contemporaneous technical dictionaries, textbooks, and the like—but should be given less weight than the intrinsic evidence. I understand that contemporaneous written sources are typically given more weight than expert testimony.

LEVEL OF SKILL IN THE ART

19. I understand that an assessment of claims of the asserted patents should be undertaken from the perspective of a person of ordinary skill in the art as of the earliest claimed priority date, which I assumed to be March 18, 2016 for the '934 patent family and August 16, 2018 for the '709 patent family. I have also been advised that to determine the appropriate level of a person having ordinary skill in the art, the following factors may be considered: (1) the types of problems encountered by those working in the field and prior art solutions thereto; (2) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; (3) the educational level of active workers in the field; and (4) the educational level of the inventor.

20. In my opinion, a person of ordinary skill in the art at the time of the alleged invention of the asserted patents is a person who would have had at least a bachelor's degree in software engineering, computer science, computer engineering, or related field, with at least two years of experience with developing software with accessibility applications. A person could also qualify as a person of ordinary skill with some combination of (1) more formal education (such as a master's of science degree) and less technical experience or (2) less formal education and more technical or professional experience with accessibility-focused software development.

21. I understand my definition differs from that proposed by Plaintiff in that I define the level of ordinary skill as including two years of experience specifically developing software with accessibility applications, whereas Plaintiff believes two years of general experience in developing and commercializing websites, web applications, and distributed software systems is sufficient. In my opinion, accessibility-focused experience is important because it that is the stated field of the asserted patents. *See, e.g.*, '934 patent, *Abstract* ("Methods and Systems for manual and programmatic remediation of websites"); 1:5-15 ("TECHNICAL FIELD The present invention relates, generally, to systems and methods for selectively enabling cloud-based assistive technologies and, more particularly, to techniques for remediating websites and other graphical user interfaces to enhance the user experience for people with diverse abilities"). Moreover, that most websites are considered to be inaccessible for one reason or another (*see, e.g.*, https://abilitynet.org.uk/news-blogs/web-accessibility-guidelines-turn-10-still-less-10-sites-are-accessible, attached as Exhibit B), demonstrates that those with general knowledge of web development but not accessibility solutions is not sufficient for a person to be considered as having ordinary skill in the art of the asserted patents.

22. My opinions regarding the level of ordinary skill in the art are based on, among other things, my experience developing, patenting, and testing new software including for accessibility applications, and my experience teaching and mentoring students at graduate and undergraduate levels. Although my qualifications and experience exceed those of the hypothetical person having ordinary skill in the art, my analysis and opinions regarding the asserted patents have been based on the perspective of a person of ordinary skill in the art as of the respective priority dates of the asserted patents.

BACKGROUND OF THE ASSERTED PATENTS

23. I understand that the parties have disputed the construction of certain terms in U.S. Patent Nos. 10,423,709, 10,444,934, 10,762,280, 10,809,877, 10,845,946, 10,845,947, 10,601,173, 10,866,691, 10,867,120 (collectively, the "asserted patents"), and that the patents

generally fall into two families: those claiming priority to the '709 patent and those claiming priority to the '934 patent. More specifically, the '280 and '120 patents claim priority to the '709 patent and share very similar specifications. The remaining patents claim priority to the '934 patent and also share a common specification. All of the patents generally relate to automating the process of remediating websites to make them compliant with web accessibility guidelines. A more detailed description of the '934 patent is set forth in my prior declaration, Docket No. 36-13. The '709 patent is similarly directed at automated remediation of websites, though its claims recite more limitations regarding artificial intelligence and machine learning.

REBUTTAL OPINIONS ON CLAIM CONSTRUCTION

24. I have been asked to provide my opinion on certain arguments raised by Plaintiff or its expert in connection with Plaintiff's opening claim construction brief. Those opinions are provided below. Because I understand that expert testimony is not universally helpful in the claim construction process, I have not attempted to provide an exhaustive opinion on all issues. To the extent any arguments by Plaintiff or its expert are not addressed in my declaration, that should not be interpreted to mean I agree with such arguments; rather, I was simply not asked to address them.

A. Means-Plus-Function Terms

25. I have reviewed the patents' specifications, the extrinsic evidence (such as the various dictionary definitions that were cited), and Mr. Myers declaration with respect to the terms that accessiBe contends are means-plus-function terms: (1) heuristic engine; (2) machine learning [algorithm/engine/system]; and (3) artificial intelligence algorithm.

26. I understand that Mr. Meyers has opined that each of the words in these terms has a known definition to a person of skill in the art. I do not disagree that each word can be defined, but my understanding of the relevant inquiry, as I have been informed by counsel, is whether these terms denote sufficient *structure* to a person of ordinary skill in the art.

27. It is my opinion, in view of the intrinsic and extrinsic evidence, that these terms (heuristic engine; machine learning [algorithm/engine/system]; and artificial intelligence algorithm) refer to some type of specialized software. The patents specifications do not disclose any algorithms or step-by-step instructions for these types of software, nor would a person of ordinary skill recognize the underlying algorithms or structures simply from the terms. For example, "artificial intelligence algorithm" could refer to an extraordinarily wide range of technologies. Beyond there being no accepted definition for what is "artificial intelligence," there are nearly an infinite number of approaches to developing software and simply saying "artificial intelligence algorithm" does not provide any details or hints as to what the claimed algorithm is.

B. "headless browser"

28. In paragraph 85 of his declaration, Mr. Myers provides the following opinion on the term "headless browser" in Claim 19 of the '709 patent, Claims 1 and 19 of the '280 patent, and Claim 14 of the '120 patent. I disagree with Mr. Myer's opinion because it is inconsistent with the customary understanding of the term "headless browser," which is also the customary understanding consistent with its usage in the claims and specifications of the '709 patent family.

29. Headless browsers are commonly understood by those of ordinary skill in the art to refer to browsers without a graphical user interface, just as Defendant has proposed. The term is well known in the browser context and related to similar uses of the word "headless." "Headless software" is commonly understood to refer to software capable of working on a device without a graphical user interface. A "headless computer" is commonly understood to refer to "a computer system or device that has been configured to operate without a monitor (the missing 'head'), keyboard, and mouse." *See, e.g.*, https://en.wikipedia.org/wiki/Headless_software and https://en.wikipedia.org/wiki/Headless_computer, attached together as Exhibit C. Consistent with this, "headless browsers" are browsers without a graphical user interface. *See, e.g.*:

- https://www.toolsqa.com/selenium-webdriver/selenium-headless-browser-

testing/, attached as Exhibit D ("A headless browser is a term used to define browser simulation programs that do not have a GUI. These programs execute like any other browser but do not display any UI. In headless browsers, when Selenium tests run, they execute in the background. Almost all modern browsers provide the capabilities to run them in a headless mode.")

- https://www.infoq.com/articles/headless-selenium-browsers/, attached as Exhibit E ("Headless browsers run without a user interface (UI.)")
- https://phantomjs.org/api/command-line.html, attached as Exhibit F ("Since PhantomJS is headless, there will not be anything visible shown up on the screen.")
- https://hacks.mozilla.org/2017/12/using-headless-mode-in-firefox/, attached as Exhibit G ("For years, the best way to load webpages without displaying UI was PhantomJS, which is based on WebKit. While it remains a fantastic tool, it's valuable to be able to run automated browser tests in official browsers, and so it's valuable to have a headless mode available. In June, Google shipped Chrome 59 featuring a headless mode, and Firefox has followed close behind with headless mode available on all platforms starting with version 56.")
- https://developers.google.com/web/updates/2017/04/headless-chrome, Docket No. 33-2 ("A headless browser is a great tool for automated testing and server environments where you don't need a visible UI shell.")

30. Mr. Myers states in paragraph 85 of his declaration that:

> My review of the claim language or specifications for the '709, '280, '120 Patents from the perspective of a POSITA did not indicate to me a requirement that the headless browser must lack a graphical user interface. See, e.g., '709 Patent at 15:52-55. In fact, the '709 Patent identifies two common browsers that include a graphical user interface—Chrome and Mozilla Firefox—as headless. Id at 15:52. These common browsers with a graphical user interface can be controlled by software without eliminating their graphical user interface. A number of available tools and

> techniques including user interface automation, scripting frameworks, programmatic interfaces and extensions, etc. exist for this purpose.

I disagree. A person of ordinary skill in the art would have understood that headless browsers lack a graphical user interface. For example, the references I provided above relate directly to the "headless browsers" described in the specification. *See* '709 patent at 15:53-54 ("a headless browser session (i.e., PhantomJS, Selenium Grid, Google Chrome, Mozilla FireFox)"); '934 patent at 5:53-54 ("15:53-54 ("a headless browser session (i.e., PhantomJS)"). Indeed, the references I cited above indicate that Chrome and Firefox introduced headless mode in 2017, between the filing of the '934 and '709 patents, consistent with the fact these examples were not included in the '934 patent (filed before Chrome or Firefox offered a headless mode) but were later added as additional examples for the '709 patent. A person of ordinary skill in the art reading the disclosures of Chrome and Firefox as exemplary headless browsers would have understood that those passages simply referred to the headless mode of operating Chrome and Firefox, as introduced in 2017. https://hacks.mozilla.org/2017/12/using-headless-mode-in-firefox/ (Exhibit G) ("In June, Google shipped Chrome 59 featuring a headless mode, and Firefox has followed close behind with headless mode available on all platforms starting with version 56."); *see also* https://www.toolsqa.com/selenium-webdriver/selenium-headless-browser-testing/ (Exhibit D) ("Selenium also supports headless versions of real browsers like Chrome, Firefox, and Edge.").

31. Although Mr. Myers is correct that browsers with a graphical user interface can be controlled by software without eliminating their graphical user interface, he is incorrect to categorize any browser controlled by software as a "headless browser." That the patents disclose the use of headless browsers in the context of automated testing simply reflects their common use case (consistent with Defendant's proposed construction), not a definition of headless browsers (as Plaintiff has proposed). Non-headless browsers do not become "headless" simply because they are controlled by software. Indeed, the references I cited above again describe how

non-headless browsers can be controlled by software or used for automated testing. https://hacks.mozilla.org/2017/12/using-headless-mode-in-firefox/ (Exhibit G) ("Browser automation is not a new idea, but is an increasingly important part of how modern websites are built, tested, and deployed. . . . To this end, browsers have long supported some level of automated control, usually via third-party driver software. Browsers are at their core a user interface to the web, and a graphical user interface in particular. This poses a few problems for automation. In some environments, there may be no graphical display available, or it may be desirable to not have the browser appear at all when being controlled."). Examples of automated testing using a browser with a GUI and with a headless browser are also shown at https://www.youtube.com/watch?v=BtmeQOcdIKI (browser GUI displayed) and https://www.youtube.com/watch?v=dEDtf8zJTKg (headless browser), respectively.

C. "alt text"

32. On pages 12 and 13 of its opening brief, Plaintiff suggests that Defendant's inclusion of the term "HTML attribute" is incorrect because the patents disclose inserting alt text into a DOM. I disagree. I have reviewed the portions of the specifications discussed in Plaintiff's briefing, and nothing suggests that the usage of "alt text" in the patents differs from the regular meaning of the term, which is as accessiBe proposed. Plaintiff's position reflects a misunderstanding of the relationship between attributes in a website's HTML code and attributes in a DOM representation of that HTML code. For example, the '934 patent states:

> The W3C Document Object Model (DOM), a W3C (World Wide Web Consortium) standard for accessing documents, is a platform and language-neutral interface that allows programs and scripts (such as JavaScript) to dynamically access and update the content, structure, and style of a document. The HTML DOM is a standard object model and programming interface for HTML, and defines the properties of all HTML elements and the methods to access the HTML elements. In other words, the HTML DOM is a standard for how to get, change, add, delete, or otherwise interact with HTML elements.

'934 patent at 4:14-24. My prior declaration (Docket No. 36-13) also describes this in greater detail at paragraphs 36-39. A person of ordinary skill in the art would have understood, both from their knowledge in the field and from the patent disclosure, that the DOM is simply a different representation of the various elements and attributes specified in the HTML code. Indeed, the W3C DOM specification definition of the "alt" attribute points directly to the alt attribute definition in HTML. *See, e.g.*, https://www.w3.org/TR/DOM-Level-2-HTML/, attached as Exhibit H at 40 (Document Object Model (DOM) Level 2 HTML Specification) ("alt of type DOMString - Alternate text for user agents not rendering the normal content of this element. ***See the alt attribute definition in HTML 4.01.***") (emphasis added); *see also* https://www.w3.org/TR/WD-DOM/introduction.html, attached as Exhibit I ("Anything found in an HTML or XML document can be accessed, changed, deleted, or added using the Document Object Model,"). A person of ordinary skill in the art would have understood that "alt text" refers to the specific "alt" HTML attribute, whether in an HTML format or in a DOM representation of that same HTML.

D. "crawling"

33. I have reviewed the patents' specifications, the extrinsic evidence (such as the various dictionary definitions that were cited), and Mr. Myers declaration with respect to the "crawling" terms. Crawling, also called spidering, has a known meaning in the art, involving analyzing multiple web pages (e.g., a website – which is a collection of related web pages) to generate a list of URLs (i.e., individual additional web pages). Web pages in the list are analyzed to find more links/web pages, which can then be further added to the list. In this way, the system crawls outward from initial pages to automatically find additional pages. This is consistent with both the dictionary definitions cited by the parties (*see* Docket Nos. 33-4, 33-5, 33-6) as well as how the patents use the term. *See, e.g.*, '280 patent at 15:40-67; '934 patent at 5:8-10, 5:54-57.

34. The entire concept of "crawling" or "spidering" involves successively moving from one node in the web (e.g., a web page) to another node (e.g., a second web page). Indeed, this practice was named *crawling* or *spidering*, because it involves moving around different nodes on the world wide web, much like a spider might crawl around different parts of a spider web. Plaintiffs appear to be rewriting the claims to replace "crawling" with "traversing," a term that is commonly understood to have a different meaning that relates to examining a single tree.

E. "file path"

35. On page 23 of its opening brief, Plaintiff appears to reference my declaration to argue that the phrase "in a directory structure" unduly limits the claims because a file path can also include the URL of the target website. To the extent this is Plaintiff's implication, I disagree. I have reviewed the portions of the specifications discussed in Plaintiff's briefing, and nothing suggests that usage of "file path" the patents differs from the regular meaning of the term, which is as accessiBe proposed. Websites are also understood to be organized in directory structures, so the phrase "in a directory structure" does not limit the term as Plaintiff suggests. *See, e.g.*, https://www.w3schools.com/html/html_filepaths.asp, attached as Exhibit J (defining an "HTML File Path" as "A file path describes the location of a file in a web site's folder structure.").

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 17th day of September, 2021 in Seattle WA .

James Fogarty, Ph.D